

CLAIMS

1. A system comprising
 - (1) a principal microfluidic conduit,
 - (2) a dead volume adjacent to and in liquid communication with the principal microfluidic conduit, and
 - (3) a drain conduit from the dead volume.
2. A system according to claim 1 which includes
 - (4) a microfluidic inlet conduit which is in liquid communication with the principal microfluidic conduit at a junction containing the dead volume.
3. A system according to claim 2 wherein the principal and inlet conduits meet at an angle to each other at the junction.
4. A system according to claim 3 which comprises an elongate arm which (i) extends into the junction, and (ii) has an outer surface which forms, with walls of the junction, a passageway of substantially annular cross-section through which, when the system is in operation, liquid flows as it flows from the inlet conduit to the principal conduit.
5. A system according to claim 4 which includes a junction conduit, the axes of the principal and junction conduits being substantially coincident, and the junction conduit
 - (i) extending from the junction away from the principal conduit, and
 - (ii) having a diameter larger than the outer surface of the arm;and wherein
 - (a) the arm is sealed within the junction conduit at a location removed from the junction, and
 - (b) the dead volume comprises an elongate dead volume of substantially annular cross-section between the arm and the junction conduit.
6. A system according to any one of the preceding claims wherein each of (i) the volumetric flow rate through the drain conduit and (ii) the volumetric flow rate through the dead volume, is 0.005 to 0.05 times the volumetric flow rate through the principal conduit.
7. A system according to claim 6 wherein each of (i) the volumetric flow rate through the drain conduit and (ii) the volumetric flow rate through the dead volume is 0.01 to 0.04 times the fluidic resistance of the principal conduit.

8. A system according to any one of the preceding claims wherein the principal microfluidic conduit is a detection conduit for examining a liquid sample, and which comprises

- (1) a microfluidic inlet conduit having a first longitudinal axis;
- 5 (2) a microfluidic outlet conduit having a second longitudinal axis;
- (3) the detection conduit, the detection conduit being in liquid connection with the inlet conduit and the outlet conduit and which has a third longitudinal axis, the third longitudinal axis being at an angle to the first longitudinal axis and at an angle to the second longitudinal axis;
- 10 (4) a first junction which lies between the inlet conduit and the detection conduit;
- (5) a second junction which lies between the detection conduit and the outlet conduit;
- 15 (6) a first junction conduit which extends from the first junction away from the detection conduit, the first junction conduit and the detection conduit having substantially coincident axes;
- (7) a second junction conduit which extends from the second junction away from the detection conduit, the second junction conduit and the detection conduit having substantially coincident axes;
- 20 (8) a first arm which
 - (i) lies within the first junction conduit and extends into the first junction,
 - (ii) defines, with the first junction conduit, the dead volume, the dead volume having a substantially annular cross-section, and
 - 25 (iii) defines, with walls of the first junction, a first passageway of substantially annular cross-section through which the liquid sample flows as it flows from the inlet conduit to the detection conduit;
- (9) a second arm which
 - (i) lies within the second junction, and extends into the second junction, and
 - (ii) defines, with walls of the second junction, a second passageway of substantially annular cross-section through which the liquid sample flows as it flows from the detection conduit to the outlet conduit; and
- 30 (10) the first drain conduit which extends from the dead volume.

9. A system according to claim 8 wherein each of the first and second arms is an optical fiber or an electrical lead.
10. A system according to claim 8 or 9 wherein the second arm defines, with the second junction conduit, a second dead volume of substantially annular cross-section,
5 and the device includes a second drain conduit which extends from the second dead volume.
11. A method of conveying a liquid through a system as claimed in any one preceding claims, the method comprising causing the liquid to flow simultaneously through the principal microfluidic conduit, the dead volume and the drain conduit.
- 10 12. A method according to claim 11 wherein the liquid is an analytical sample comprising a solvent and analytes dissolved in the solvent.
13. A method according to claim 11 wherein the sample is the product of a liquid chromatography column.
14. A method of examining a liquid sample which comprises passing the sample
15 through a system as claimed in any one of claims 8 to 10, exposing the sample to light while it is in the detection conduit, and examining a signal from the sample.
15. A method of examining a liquid sample which comprises passing the sample through a system as claimed in any one of claims 8 to 10, exposing the sample to an electrical effect while it is in the detection conduit, and examining a signal from the
20 sample.
16. A method according to claim 15 wherein the sample is the product of a liquid chromatography microcolumn.